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Editorial comment

Chronic compartment syndrome is an under-recognized cause of leg-pain

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In this issue of the *Scandinavian Journal of Pain* Jan Roar Orlin and his co-workers publish a study on chronic compartment syndrome of the legs [1]. They did a comprehensive epidemiological study in which they document that chronic compartment syndrome of the legs is a more common condition than formerly recognized.

Chronic compartment syndrome of the legs is suspected when a person has painful leg cramps, especially at night, forcing the patient to get out of bed and walk around in order to obtain relief.

The patient has *definitive compartment syndrome* if

(1) on clinical examination there is tenderness on palpation of the leg-compartments
(2) and reduced sensation (hypoaesthesia) to somatosensory stimulation in one or both rami of the fibular nerve
  (2a) nervus fibularis profundus (anterior compartment),
  (2b) nervus fibularis superficialis (lateral compartment),
  (2c) and/or the tibial nerve (nervus suralis (superficial posterior compartment)).
(3) There should be normal dermatomal somatosensory reactions *above the knee.*

In a *provocation step-exercise test* the patient is asked to perform "walking on the spot" by quickly alternating between standing on the heels and on the toes. Extensive pain within 3 min of starting the step-exercise test is considered diagnostic.

The patient has *probable compartment syndrome* if the patient has typical pain and reaction to the step-exercise test, but normal somatosensory reactions to pinprick and cotton-wool in all three peripheral nerve cutaneous areas.

1. Prevalence of definite compartment syndrome of the legs in almost 1 in 10 adult persons?

Orlin and co-workers performed a postal questionnaire survey, approaching 3000 randomly selected persons from the general population in Western Norway, of whom more than ¾ responded (2308). One quarter of the respondents had leg-pain or leg-cramps at night. A total of 286 of these accepted an invitation to be examined clinically and 1/3 of these were diagnosed with definitive compartment syndrome of the legs. They conclude that almost 8% of the adult general population have nightly leg-pain or leg-cramps that well can be chronic compartment syndrome, but with subjective symptoms ranging from mild to severe.

2. Restless legs syndrome or chronic compartment syndrome?

Restless legs syndrome, or Willis–Ekbom disease, has four essential diagnostic criteria [2]:

(1) the urge to move the legs (with or without uncomfortable leg sensations),
(2) beginning or worsening of symptoms during quiescence,
(3) relief on moving the legs,
(4) and occurrence largely in the evening.

Restless legs syndrome is similar to chronic compartment syndrome; however, patients with restless leg syndrome have normal somatosensory responses to pin-prick and cotton-wool stimulation. They do not have the nerve-entrapments that patients with compartment syndrome have. Restless legs syndrome has a similar prevalence (6–7%) as chronic compartment syndrome [1,2].

Restless legs syndrome can be treated with dopamine-agonists, but with a significant risk of aggravated symptoms after an initial period of relief, called augmentation of symptoms [2]. The first line treatment now appears to be with pregabalin, with similar effect on symptoms but a much lower risk of augmentation of symptoms [2].

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3. Measurement of intracompartmental pressure

Traditionally the diagnosis of compartment syndrome was made only after measurement of intracompartmental pressure significantly above the normal resting pressure of about 10–15 mm Hg, some require this pressure to be above 30 mm Hg before the diagnosis of (acute?) compartment syndrome can be made.

Jan Roar Orlin and co-workers were able to measure intracompartmental pressure after positive response to the provocative step-exercise test in 13 persons with definitive compartment syndrome and found normal pressure in all. In two of these 13 patients the pressure was 14.9 and 15.0 mm Hg.

Therefore the authors conclude that invasive intracompartmental pressure measurements are not necessary for the diagnosis of *chronic* compartment syndrome [1]. In other peripheral nerve entrapment syndromes pressures are also not much elevated (e.g. carpal tunnel syndrome, tarsal tunnel syndrome, anterior cutaneous nerve entrapment syndrome of the abdominal wall) [3].

4. Treatment options for chronic compartment syndrome

Conservative advice of less physical activities involving leg muscles may reduce symptoms in many cases. Severe compartment syndrome of the legs can successfully be treated with surgical decompression [4].

Conflict of interest

No conflict of interest is declared by the authors.

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